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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/740,091	<b>Applicant(s)</b> COHEN ET AL.	
	<b>Examiner</b> Beth Van Doren	<b>Art Unit</b> 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-17 and 19-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-17 and 19-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The following is a non-final office action in response to the request for reconsideration received 11/15/2005. This after-final communication was in response to an interview held between the Applicant and Examiner Heck in which the Examiner agreed to re-open prosecution. Therefore, the finality of the office action dated 10/11/2005 has been withdrawn and the following non-final office action has been established. Claims 1, 3-17, and 19-32 are pending in this application.

#### ***Claim Objections***

2. Claims 12 and 27 are objected to because of the following informalities: omitted word. Claims 12 and 27 recite "the lift cross-selling statistic is ratio of [...]" which should more appropriately be --the lift cross-selling statistic is a ratio of [...]-. Appropriate correction is required. Correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-16, 21, 22, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 1, 7, 22, and 32 are indefinite because the terms "at least substantially" and "substantially equal" are relative terms that render the claims indefinite. These terms are not defined by the claim and the specification does not provide a standard for ascertaining the

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requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

As for claim 1, claim 1 recites that a cross-selling opportunities metric is determined by at least substantially optimizing an objective function. It is not clear what “substantially optimizing an objective function” entails and there is no standard provided to determine when substantial optimization is completed. Clarification is required. For examination purposes, it has been construed that the objective function has been completely optimized. Since claims 3-16 depend from claim 1, they contain the same deficiencies and are rejected for the same reasons set forth with respect to claim 1.

As for claims 7 and 22, claims 7 and 22 recite that resource allocations are substantially equal for all items whose resource allocations are greater than zero. It is unclear as to what the Applicant intends for the range of the resource allocations to be so that they are still considered substantially equal since the Applicant does not disclose in the specification or claims a range of such a value. Clarification is required.

As per claim 32, claim 32 recites “substantially maximizing the business goal subject to the constraints”. It is unclear as to what constitutes a substantially maximized goal since the originally presented disclosure does not provide a range or any standard that explains when a goal is substantially maximized. For examination purposes, it has been construed that the business goal has been completely optimized. Clarification is required.

5. Further, Claims 6 and 21 recite “one of the constraints is directed towards size of markets involving the first and second sets of items such that the resource allocation is biased towards markets that are larger than other markets”. It is unclear in the claims as to what the applicant

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considers to be a market that is “larger than other markets” (i.e. how this is quantified). Looking to the specification, Applicant discloses the term “larger” by stating that a constraint is added to control implicit recommendation of customer groups because they have a large likelihood of success even though they do not represent a large market. Applicant also discusses a constraint that biases the efforts toward customer populations that have greater growth potential. It appears that these discussions are with regards to the same constraint, and therefore it is unclear as to whether applicant is judging a larger market in terms of numbers of customers or in terms of growth potential. Clarification is required. For examination purposes, Examiner has construed that a larger market is judged in terms of growth potential.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-17, and 19-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

7. Claim 1 contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Claim 1 recites a method for solving a business issue by optimizing an objective function using linear programming optimization with respect to constraints and a cross-sell statistic (with no constraints or cross-sell statistic specified), where the cross sell statistic indicates a potential to

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purchase a second item based on the purchase of a first item. By optimizing this function, a cross-sell opportunity metric is determined that solves a business issue (with no constraints or cross-sell statistic specified).

Looking to the specification for support, the specification generally discusses left-hand-side and right-hand-side items that are associated, the association having a cross-selling statistic. The specification states that these statistics or metrics are calculated from raw data. Statistics may include lift and the expected confidence. An optimization model is used to meet business issues and objectives related to the optimal amount of effort, subject to constraints. The specification continues to set forth an example of such a problem with exemplary constraints, but then states that this is only an example with other embodiments also considered.

Examiner first points out that claim 1 is not specifically limited to this singular example. This fact is supported by dependant claims 3-6, each of which are directed to broader versions of the different constraints of the exemplary problem. Thus, not all of these constraints are required to be within the scope of claim 1. Further, the constraint presented in claim 8 is not even discussed with regards to the example model. As such, since the rest of the specification is defined in broad and inexact terms, examiner asserts that one of skill in the art would not be able to make any other model using the disclosure except the example model presented without undo experimentation.

Further, even if one of skill in the art did use the exemplary model set forth in the specification, the values used in this model are defined so unclearly that one would not be able to implement the model without undue experimentation. For example, the objective function of the model contains the lift of rule i. However, the term lift is described as a ratio of the probability

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of having the right-hand-side items given that a customer has the left-hand-side items, over the probability that the customer has the right-hand-side items. Examiner points out that claim 1 of the current application only refers to a first and second set of items and not these right-hand-side items and left-hand-side items. Further, the specification does not describe how to calculate this lift statistic in such a way that one would be able to make or use such a statistic, as discussed below. Therefore, claim 1 is not enabled to use this lift statistic to perform the calculation and for at least this reason one of skill in the art would not be able to implement claim 1 using the example disclosed. Further the model utilizes the parameters of expected confidence, target effort for a product, return from rule i, and the maximum expected confidence for the weighted average, which are disclosed as known input parameters. However, the specification does not disclose how to determine confidence or the maximum expected confidence for the weighted average, and thus it is not clear as to how one would know or calculate these input values. The specification only discloses confidence by stating the “E\_Confidence variable may be used with the lift variable to indicate the frequency with which the right-hand-side product occur in the overall population” and that “the optimization model 32 may also have as input: user supplied parameters such as the product effort target levels, the anticipated returns from selling to different customer groups, and maximum acceptable average expected confidence”, but the specification does not describe what this value specifically represents, how it is determined, or what the range of these different values would be (i.e. integer less than 10, value between 0 and 1, etc.). Further, while the specification does disclose adding a constraint that limits the average expected confidence weighted by effort (a constraint in which the maximum expected confidence for the weighted average is used), there is no discussion of how the value of maximum expected

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confidence for the weighted average is known or calculated. Therefore, the invention of claim 1 is further not enabled because one of skill in the art would not know how to implement claim 1 using the model example of the disclosure because undue experimentation would be required to determine values for the average expected confidence weighted by effort and the confidence parameters.

Therefore, it is respectfully submitted that claim 1 fails to comply with the enablement requirement. As such, claims 3-16 are not enabled based on their dependency on claim 1. Some of these dependent claims have further enablement issues, as discussed below.

Furthermore, independent claims 17 and 32 have substantially similar issues to those set forth above with respect to claim 1. Claims 17 and 32 are also not limited to the singular example set forth in the originally presented disclosure, and thus would require undue experimentation if one of skill in the art were to make any other model using the disclosure. Further, even if one of skill in the art did use the exemplary model set forth in the specification, the values used in this model are defined so unclearly that one would not be able to implement the model without undue experimentation. Therefore, claims 17 and 32 have substantially similar issues to that of claim 1. Claims 19-31 are also not enabled based on their dependency on claim 17.

8. Claims 10, 12-13, 25, and 27-28 all recite left-hand-side items and right-hand-side items. However, the claimed invention is not disclosed in a manner to support both the left-hand-side items and right-hand-side items recited in claims 10, 12-13, 25, and 27-28 and the first set of items and second set of items recited in at least claims 1 and 17. The summary, figures, and detailed description originally presented contain no discussion of first or second items. Claim 1



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states that a cross-selling relationship associates the purchase of a first set of items with a second set of items and a cross-selling statistic indicates the potential of purchase of the second set of items based on the purchase of the first set of items. Therefore, it appears in claim 1 that the first set of items is equivalent to the left-hand-side items and the second set of items is equivalent to the right-hand-side items. However, with the additional limitations of claims 10, 12-13, 25, and 27-28 to further include left-hand-side items and right-hand-side items along with the first and second set of items, the claims are no longer enabled as the disclosure does not support the existence of both a first and second set of items and left-hand-side and right-hand-side items. For examination purposed, it has been construed that the first set of items is equivalent to the left-hand-side items and the second set of items is equivalent to the right-hand-side items.

Clarification is required.

9. Claims 12 and 27 recite that the lift cross-selling statistic ratio is the ratio of the probability of having the right-hand-side items given that a customer has the left-hand-side items, over the probability that the customer has the right-hand-side items. The lift ratio was not described in the specification in such a way as to enable one skilled in the art to compute this ratio and use it to constrain the objective function. The originally presented disclosure offers nothing more to compute this statistic than what is recited in the claims and that a large lift value indicates that the percentage of the population with the left-hand-side products is small compared to the relationship between the left hand side and the right hand side products. The disclosure also states that if the lift value is greater than one, the customer is likely to purchase a product. Therefore, without any further information offered by the detailed description and the figures, it is not clear as to how this ratio of the probability of right-hand-side items given left-hand-side

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items, over the probability of right-hand-side items works. First, since the lift is described with respect to a single customer, it is unclear as to how one would use this statistic to represent an entire population of similar customers, or how this statistic represents the potential for purchase of a second item. Second, without any concrete information enabling the use of such a statistic, one would not be able to make a judgment call on whether a lift value was “large” and thus indicated a likely purchase. The lift is used to constrain the example problem presented in the detailed description of the specification. However, one would not know how this ratio for lift relates to the return and effort of a specific rule. Thus, the calculation and use of the statistic of lift is not enabled. Clarification is required. For examination purposes, examiner has construed the lift ratio in claims 12 and 27 to merely be a relationship between the probability of a customer having the right-hand-side items given that the customer has the left-hand-side items, as disclosed in claim 32.

10. With regards to claims 13 and 28, claims 13 and 28 recite that the cross-selling statistic includes an expected confidence cross-selling statistic that indicates the frequency with which the right-hand-side items occurs in the overall population of the first and second items. This limitation is not enabled since there is no discussion of a population of first and second items with relation to a confidence statistic beyond originally presented claims 13 and 28. The summary, figures, and detailed description originally presented contain no discussion of first or second items or a population including these first or second items. Originally presented claim 1 states that a cross-selling relationship associates the purchase of a first set of items with a second set of items and a cross-selling statistic indicates the potential of purchase of the second set of items based on the purchase of the first set of items. Therefore, it appears that the first set of

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items is equivalent to the left-hand-side items and the second set of items is equivalent to the right-hand-side items. However, the original specification states that the confidence variable indicates the frequency with which the right hand side product occurs in the overall population, where population refers to the customer population. Therefore, claim 13 is not enabled since there is no support for the expected confidence to be related to a population of items.

Clarification is required. For examination purposes, Examiner has construed this limitation to be that the expected confidence cross-selling statistic indicates the frequency with which the right-hand-side items occurs in the overall population.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-17, and 19-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bibelnieks et al. (U.S. 2003/0208402) in view of *Model1 by Group 1 Software* (www.g1.com).

12. As per claim 1, Bibelnieks et al. teaches a computer-implemented method to solve a business issue related to marketing opportunities, comprising the steps of:

using a computer to identify and store asset classes that represent groups of customers that are scored and segmented based on data stored in a marketing database, the asset classes representing customers with approximately the same value for a particular marketing effort (See paragraphs 0017, 0038-9, 0045-6, wherein customers are grouped into asset classes based on value. Paragraphs 0040-1 disclose the computer environment used);

said groups' relationships being associated with a statistic, wherein the statistic is indicative of potential for response based on data such as the purchase history of a first set of items (See paragraphs 0017, 0038-9, 0045-6, wherein customers are grouped into asset classes based on value. This value is determined through the consideration of compiled data, such as the behavioral data of purchase history); and

using a computer to determine a marketing opportunities metric that solves the business issue (See paragraphs 0016-7, 0042, 0047, 0049, 0067, 0069, wherein the opportunities metric is solved, this metric being a measure of whether or not to include a customer group in a marketing plan. The business issue is to determine a marketing plan based on a limited budget. Paragraphs 0040-1 disclose the computer environment used),

wherein the marketing opportunities metric is determined for at least one marketing relationship by optimizing an objective function with respect to constraints and to the statistic, wherein at least one of the constraints is based upon the business issue (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, wherein the problem is optimized using the objective set forth in the problem (i.e. maximizing Return of Investment) and linear programming techniques);

wherein the objective function is solved for resource allocation related to the purchase of a second set of items using linear programming optimization (See paragraph 0010, 0016-7, 0047, 0058, 0064, 0066, wherein the objective is solved for the promotion causing purchase of a second, subsequent item, using linear programming techniques).

However, Bibelnieks et al. does not expressly disclose that the marketing opportunities are cross-sell opportunities or retrieving cross-selling relationships that associate purchases of a first set of items with purchases of a second set of items. Further, Bibelnieks et al. does not

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expressly disclose that the statistic that associates the customers is a cross-selling statistic, wherein the cross-selling statistic is indicative of potential for the purchase of the second set of items based upon the purchase of the first set of items, or that the marketing opportunities metric is for cross-selling.

*Modell by Group 1 Software* discloses cross-sell opportunities, retrieving cross-selling relationships that associate purchases of a first set of items with purchases of a second set of items, and relationships of the customers are associated with a cross-selling statistic, wherein the cross-selling statistic is indicative of potential for the purchase of the second set of items based upon the purchase of the first set of items, and determining who to cross-sell items to based on the score determined for a customer (See page 1, sections 1-2, page 3, section 1, page 4, page 9, sections 2-3, and page 10, section 1, wherein cross-selling opportunities are identified for customers using data associated with the customers to generate a score. Cross-selling opportunities are identified by analyzing previous purchases to find new or additional products customers are most likely to buy).

Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Bibelnieks et al. specifically discloses grouping customers into asset classes based on the data associated with the customers (such as purchase history) and the customers likely value (measured by likelihood to respond to marketing). Cross-selling is a well-known way to identify a customer or groups of customers that, having purchased certain items in the past, are most likely to purchase specific items in the future. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to group

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customers into an asset class using cross-sell relationships in order to increase the return on investment (ROI) of marketing by more accurately grouping customers based on data associated with those customers. See *Modell by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. *Modell by Group 1 Software* also discloses the use of cross-selling by direct marketers and retailers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers as well as direct marketers and retailers.

13. As per claim 3, Bibelnieks et al. discloses wherein the objective function is solved for effort resource allocation related to the purchase of the second set of items using linear programming optimization (See paragraph 0010, 0016-7, 0047, 0058, 0064, 0066, wherein the objective is solved for the promotion efforts related to the second, subsequent item, using linear programming techniques). However, Bibelnieks et al. does not expressly disclose that the resource allocated is personnel effort.

*Modell by Group 1 Software* discloses identifying the customers that are most likely to respond to a cross-sell effort, thus optimizing return and resource allocation by focus marketing efforts on these customers (See page 3, section 1, page 4, page 7, section 1, and page 8, section 3, wherein the retailers spend their time marketing to the customers most likely to respond, personalizing the marketing attempts to these customers). However, *Modell by Group 1 Software* also does not expressly disclose that the resource allocated is personnel effort.

Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify the customers that are most likely to respond to marketing and

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promotional events so as to maximize the return on investment of the marketing efforts.

Bibelnieks et al. discloses optimizing a problem by allocating limited resources, such as budget, to marketing efforts. *Model 1 by Group 1 Software* specifically discusses customizing communications to the customers that are being targeted by the marketing effort. It is well-known that marketing efforts, such as determining target groups and creating communications, takes time and effort by the marketers. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the allocation of personnel effort when optimizing the objective of the system in order to more accurately predict the return on investment by including all costs associated with a marketing effort, such as staffing. A budget, such as that of Bibelnieks et al., would include all costs associated with a marketing effort, such as the cost of staffing the effort.

14. As per claim 4, Bibelnieks et al. teaches wherein one of the constraints is based upon target effort for an item (See paragraphs 0054, 0058, 0060, wherein the optimization is constrained by merchandise type and percentage of offerings).

15. As per claim 5, Bibelnieks et al. teaches wherein one of the constraints is directed to size of markets involving the first and second sets of items (See paragraphs 0046, 0049, 0051-2, 0066-9, wherein a constraint assigns budgets to markets based on the asset class, such as the size of the asset class. The first item is a previously purchased item (paragraph 0045) and the second is projected merchandise associated with the promotion (paragraphs 0016-7, 0047, 0058, 0064, 0066)).

16. As per claim 6, Bibelnieks et al. teaches wherein one of the constraints is directed to size of markets involving the first and second sets of items (See paragraphs 0046, 0049, 0051-2,

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0066-9, wherein a constraint assigns budgets to markets based on the asset class, such as the size of the asset class. The first item is a previously purchased item (paragraph 0045) and the second is projected merchandise associated with the promotion (paragraphs 0016-7, 0047, 0058, 0064, 0066)). Bibelnieks et al. further discloses directing the efforts (i.e. biasing the efforts) towards customer markets that are likely to return a larger return on investment over time (i.e. a larger growth potential (See paragraphs 0046-7, 0049, 0066, and 0069)).

17. As per claim 7, Bibelnieks et al. wherein one of the constraints constrains the objective function to generate resource allocations that are substantially equal for all items whose resource allocations are determined by the optimization function to be greater than zero (See paragraphs 0016-7, 0047, 0058, 0066, 0069, wherein the optimization problem is constrained so that the decision variables are either 0 or 1 and thus all items who receive allocations (i.e. the decision is equal to 1) will have substantially equal allocations).

18. As per claim 8, Bibelnieks et al. teaches wherein one of the constraints constrains the objective function to maximize the return on investment (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, wherein the problem is optimized using the objective set forth in the problem (i.e. maximizing Return of Investment) and linear programming techniques, including constraints).

However, while Bibelnieks et al. teaches a return on investment, Bibelnieks et al. does not expressly disclose that the investment is money received from shareholders of the company.

*Modell by Group 1 Software* discloses return on investment (See page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1), however *Modell by Group 1 Software* does not expressly disclose that the investment is money received from shareholders of the company.



Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Investors and shareholders investing money in a company to turn a profit is old and well known in the art. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to maximize the return on equity in order to more effectively acquire investors to the company by assuring an increase in the returns through more accurate modeling of customer response. See *Modell by Group 1 Software*, page 5, section 4, page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers.

19. As per claim 9, Bibelnieks et al. discloses wherein the marketing opportunities metric includes an effort marketing opportunities metric which solves the business issue, wherein the business issue is directed to the resource allocation that maximizes return on investment related to the purchasing of the second set of items (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, wherein the problem is optimized using the objective set forth in the problem (i.e. maximizing Return of Investment) and linear programming techniques. The business issue is to determine a marketing plan).

However, Bibelnieks et al. does not expressly disclose cross-selling opportunities or an effort cross-selling opportunities metric.

*Modell by Group 1 Software* discloses cross-sell opportunities and an effort cross-selling opportunities metric (See page 1, sections 1-2, page 3, section 1, page 4, page 9, sections 2-3,

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and page 10, section 1, wherein cross-selling opportunities are identified for customers using data associated with the customers to generate a score. Cross-selling opportunities are identified by analyzing previous purchases to find new or additional products customers are most likely to buy and then efforts are made to cross-sell the items).

Both *Model1 by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Bibelnieks et al. specifically discloses grouping customers into asset classes based on the data associated with the customers (such as purchase history) and the customers' likely value (measured by likelihood to respond to marketing).

Cross-selling is a well-known way to identify a customer or groups of customers that, having purchased certain items in the past, are most likely to purchase specific items in the future.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to group customers into an asset class using cross-sell relationships in order to increase the return on investment (ROI) of marketing by more accurately grouping customers based on data associated with those customers. See *Model1 by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. *Model1 by Group 1 Software* also discloses the use of cross-selling by direct marketers and retailers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers as well as direct marketers and retailers.

20. As per claims 10-13, Bibelnieks et al. discloses:

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as per claim 10, groups' relationships for marketing purposes (See paragraphs 0017, 0038-9, 0045-6).

as per claim 11, wherein the marketing statistic is a lift marketing statistic (See figure 5 and paragraphs 0046-8, wherein the marketing statistic for an asset class is related on the increase return versus risk (i.e. the amount of raise in return versus the amount of risk));

as per claim 13, associating a groups' relationships with a statistic indicative of potential for response (See paragraphs 0017, 0038-9, 0045-6, wherein customers are grouped into asset classes based on value. This value is determined through the consideration of compiled data, such as the behavioral data of purchase history).

However, Bibelnicks et al. does not expressly disclose that the marketing statistic is a cross-selling statistic or that cross-selling relationships include association rules, wherein the association rules have left-hand-side items and right-hand-side items. Further, Bibelnicks et al. does not expressly disclose cross-selling statistic further includes an expected confidence cross-selling statistic that indicates the frequency with which the right-hand-side items occurs in the overall population or that the lift cross-selling statistic is relationship of the probability of having the right-hand-side items given that a customer has the left-hand-side items.

*Modell by Group 1 Software* discloses cross-sell relationships that include association rules, wherein the association rules have left-hand-side items and right-hand-side items (See page 1, sections 1-2, page 3, section 1, page 4, page 9, sections 2-3, and page 10, section 1, wherein cross-selling relationships are defined between groups of items, where previously purchased items are used to choose a new or additional item to cross-sell to the customer.

Examiner points out that the specification of the Applicant defines left-hand-side items as items

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that the customer already has and right-hand-side items as items that are associated with the left-hand-side item for cross-selling. Therefore, purchased products of *Modell by Group 1 Software* are the left-hand-side item and the associated product that is likely to be bought is the right-hand-side item).

*Modell by Group 1 Software* further discloses a cross-selling statistic wherein the cross-selling statistic further includes an expected confidence cross-selling statistic that indicates the frequency with which the right-hand-side items occurs in the overall population and that the lift cross-selling statistic is relationship of the probability of having the right-hand-side items given that a customer has the left-hand-side items (See page 1, sections 1-2, page 2, section 2, page 3, section 1, page 4, page 9, sections 2-3, and page 10, section 1, wherein cross-selling opportunities are identified for customers using data associated with the customers to generate a score. Cross-selling opportunities are identified by analyzing previous purchases to find new or additional products customers are most likely to buy. The extent and strength of the interrelationship of the products is identified to determine the accuracy of the matching. Therefore a relationship is known to the system to account for the correlation between products).

Both *Modell by Group 1 Software* and Bibelnicks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Bibelnicks et al. specifically discloses grouping customers into asset classes based on the data associated with the customers (such as purchase history) and the customers' likely value (measured by likelihood to respond to marketing). Cross-selling is a well-known way to identify a customer or groups of customers that, having purchased certain items in the past, are most likely to purchase specific items in the future.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to group customers into an asset class using cross-sell relationships and use the features associated with cross-sell relationships, as disclosed by *Model1 by Group 1 Software*, in order to increase the return on investment (ROI) of marketing by more accurately grouping customers based on data associated with those customers. See *Model1 by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. *Model1 by Group 1 Software* also discloses the use of cross-selling by direct marketers and retailers. See Bibelnicks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers as well as direct marketers and retailers.

21. As per claim 14, Bibelnicks et al. discloses wherein the first and second set of items include products to be purchased by customers (See paragraph 0031, 0045, 0047, 0058, 0064, 0066, wherein the items are products (merchandise)).

22. As per claim 15, Bibelnicks et al. teaches wherein the first and second set of items include services to be purchased by customers (See paragraphs 0010, 0031, wherein the items to be promoted and are purchased are services).

23. As per claim 16, Bibelnicks et al. teaches wherein the cross-selling relationships and cross-selling statistic are generated from a data miner based upon historical data on sales related to the first items (See paragraphs 0011, 0044-6, and 0052, wherein the system manipulates data stored in a database about historic sales and behavior to make predictions based on patterns).

However, Bibelnieks et al. does not expressly disclose historical data on sales related to the second sets of items.

*Modell by Group 1 Software* discloses utilizing known historical data on products to predict the interrelationship of the products (See page 1, sections 2-3, page 2, section 2, page 3, section 1, page 7, section 1, and page 9, sections 1-3, wherein data known about products and about customers is used to train model to understand the inter-relationship of products).

Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Bibelnieks et al. specifically discloses using data stored in a database about historic sales and behavior to make predictions based on patterns. Identifying cross-sell opportunities is a well-known marketing technique used with data mining wherein the historical data about multiple products is used to determine the relationship between the products. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the historical data on sales related to the first and the second sets of items of Bibelnieks et al. (such as the items previously purchased and the merchandise being promoted) in order to more accurately predict which customer groups are most likely to respond to a specific product or promotion. See *Modell by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1, which discusses the more accurate targeting of customers by direct marketers and retailers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses the better targeting of customers by direct marketers and retailers.

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24. As per claim 17, Bibelnieks et al. discloses a computer-implemented system for solving a business issue related to resource allocation involved in marketing opportunities, comprising:

an association rules data store to store asset classes that represent relationships of customers that are scored and segmented based on data stored in a marketing database, the data including purchase data of a first set of items (See paragraphs 0017, 0038-9, 0045-6, wherein customers are associated in asset classes based on at least previous purchases. Paragraphs 0040-1 disclose the computer environment used);

said groups' relationships being associated with a statistic, wherein the statistic is indicative of potential for response based on data such as the purchase history of a first set of items (See paragraphs 0017, 0038-9, 0045-6, wherein customers are grouped into asset classes based on value. This value is determined through the consideration of compiled data, such as the behavioral data of purchase history); and

an optimization module connected to the association rules data store and containing at least one constraint related to the business issue, wherein the optimization module determines resource allocation for a business operation related to the purchase of the second set of items, said determining being performed based upon the relationships, the statistic, and the business issue constraints (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, wherein the problem is optimized using the objective set forth in the problem (i.e. maximizing Return of Investment) and linear programming techniques. The relationships of the customers, the statistics (i.e. value) of the customers, and the business issue (i.e. a marketing plan based on a limited budget) are all considered in the optimization);

wherein the optimization module is a linear programming module that includes an objective function, wherein the objective function is solved for the resource allocation related to the purchase of the second set of items (See paragraph 0010, 0016-7, 0047, 0058, 0064, 0066, wherein the objective is solved for the promotion causing purchase of a second, subsequent item, using linear programming techniques).

However, Bibelnieks et al. does not expressly disclose that the marketing opportunities are cross-selling opportunities, that the defined relationships (hinged on the purchases of first sets of items) are cross-selling relationships that associate the purchase of a first set of items with the purchase of a second set of items, or that the statistic (which is a value based on each customer's purchase of a first set of items) is a cross-selling statistic indicative of the potential for purchase of the second set of items.

*Modell by Group 1 Software* discloses cross-sell opportunities, retrieving cross-selling relationships that associate purchases of a first set of items with purchases of a second set of items, and relationships of the customers are associated with a cross-selling statistic, wherein the cross-selling statistic is indicative of potential for the purchase of the second set of items based upon the purchase of the first set of items, and determining who to cross-sell items to based on the score determined for a customer (See page 1, sections 1-2, page 3, section 1, page 4, page 9, sections 2-3, and page 10, section 1, wherein cross-selling opportunities are identified for customers using data associated with the customers to generate a score. Cross-selling opportunities are identified by analyzing previous purchases to find new or additional products customers are most likely to buy).



Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize the return on investment of marketing dollars. Bibelnieks et al. specifically discloses grouping customers into asset classes based on the data associated with the customers (such as purchase history) and the customers likely value (measured by likelihood to respond to marketing). Cross-selling is a well-known way to identify a customer or groups of customers that, having purchased certain items in the past, are most likely to purchase specific items in the future. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to group customers into an asset class using cross-sell relationships in order to increase the return on investment (ROI) of marketing by more accurately grouping customers based on data associated with those customers. See *Modell by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. *Modell by Group 1 Software* also discloses the use of cross-selling by direct marketers and retailers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers as well as direct marketers and retailers.

25. Claims 19-31 are substantially similar to claims 4-16, respectively, and therefore claims 19-31 are rejected using the same art and rationale set forth above.

26. As per claim 32, Bibelnieks et al. discloses a computer-implemented marketing analysis system, comprising:

computer data storage means for storing association rules that associate a group of customers based on the customers' purchases of a first set of items (See paragraphs 0017, 0038-

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9, 0045-6, wherein customers are grouped into asset classes based on value. This value is determined through the consideration of compiled data, such as the behavioral data of purchase history. See paragraphs 0040-1 that disclose the computer environment used);

said association rules being associated with a lift statistic, said lift statistic being indicative of potential for the purchase of the second set of items based upon the purchase of the first set of items (See paragraphs 0017, 0038-9, 0045-6, wherein customers are grouped into asset classes based on value. This value is determined through the consideration of compiled data, such as the behavioral data of purchase history. See figure 5 and paragraphs 0046-8, wherein the marketing statistic for an asset class is related on the increase return versus risk (i.e. the amount of raise in return versus the amount of risk));

constraints storage means for storing constraints related to achieving a predetermined business goal (See paragraphs 0016-7, 0042, 0047, 0049, 0066-7, 0069, the business goal is to determine an optimal marketing plan. The problem is optimized using linear programming techniques, wherein the objective is constrained by known limitations, such as budget limitations);

optimization means connected to the computer data storage and to the constraints storage means (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, which disclose the optimization performed by the system. Paragraphs 0040-1 disclose the computer environment used);

said optimization means containing an objective function that determines the amount of effort to be used in the selling of the items by maximizing the predetermined business goal subject to the constraints, the association rules, and the lift statistic (See paragraphs 0016-7, 0047, 0049, 0066-7, 0069, wherein the problem is optimized using the objective set forth in the

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problem (i.e. maximizing Return of Investment) and linear programming techniques. See figure 5 and paragraphs 0046-8, wherein the marketing statistic of lift (i.e. the amount of raise in return versus the amount of risk) is used in the optimization);

wherein the objective function is solved for resource allocation related to the purchase of the second set of items using linear programming optimization (See paragraph 0010, 0016-7, 0047, 0058, 0064, 0066, wherein the objective is solved for the promotion causing purchase of a second, subsequent item, using linear programming techniques).

However, Bibelnieks et al. does not expressly disclose a cross-selling analysis system, that the association rules stored in the computer data storage means associate purchases of a first set of items with purchases of a second set of items, that the statistic is a lift cross-selling statistic, or using such a lift cross-selling statistic in optimizing the objective function.

*Modell by Group 1 Software* discloses cross-sell analysis, storing the association of purchases of a first set of items with purchases of a second set of items, that associations are related to a cross-selling lift statistic, where this cross-selling lift statistic is used to optimize the problem (See page 1, sections 1-2, page 3, section 1, page 4, page 9, sections 2-3, and page 10, section 1, which discusses cross sell analysis. The relationships between products are used to score customers, this score indicating customers with elevated potential for return on investment. Cross-selling opportunities are identified by analyzing previous purchases to find new or additional products customers are most likely to buy. When determining a marketing effort, the effort is focused on the most profitable customers).

Both *Modell by Group 1 Software* and Bibelnieks et al. disclose using models and data about customers to identify marketing and promotional opportunities that accurately maximize

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the return on investment of marketing dollars. Bibelnieks et al. specifically discloses grouping customers into asset classes based on the data associated with the customers (such as purchase history) and the customers' likely value (measured by likelihood to respond to marketing).

Cross-selling is a well-known way to identify a customer or groups of customers that, having purchased certain items in the past, are most likely to purchase specific items in the future.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to associate customers into an asset class using cross-sell relationships in order to increase the return on investment (ROI) of marketing by more accurately grouping customers based on data associated with those customers. See *Model1 by Group 1 Software*, page 4, section 1, page 5, section 4, page 6, sections 1-2, and page 7, section 1, which discusses increasing the ROI of marketing dollars through the better targeting of customers. *Model1 by Group 1 Software* also discloses the use of cross-selling by direct marketers and retailers. See Bibelnieks et al., paragraphs 0003-4, 0015, 0017, 0046, which also discusses increasing the ROI of marketing dollars through the better targeting of customers as well as direct marketers and retailers.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nabe et al. (U.S. 6,901,406) discloses modeling data concerning customers into a multi-dimensional structure for use by a targeting engine.

Honarvar et al. (U.S. 6,321,206) discloses monitoring performance data associated with customers and using this data to determine which products to promote to the customers, such as through cross-selling efforts.

Cunningham et al. (U.S. 6,029,139) discloses optimizing the promotion of a product by considering the sales history, time, etc.

Samra et al. (U.S. 6,970,830) teaches building and embedding marketing models are embedded to target customers for marketing based on relevant customer metrics, including considering if the customers will avail themselves to other products (cross-sell).

“Unica Releases Model1 Enterprise Edition” (Business Wire) discloses a data mining product that determines cross-sell opportunities in an automated fashion.

Hollander (“Model1 deftly parses customer characteristics”) teaches prediction using historical data to determine relationships between product purchases, thus identifying cross-sell potential.

SAS Institute, Inc. ([www.sas.com](http://www.sas.com)) discloses customer relationship management through the use of data warehousing, data mining, and OLAP by which the best candidates for cross-sell opportunities are identified.

Rosen (“There’s Gold in that There Data”) teaches figuring out what products can be cross sold to customers based on stored data associated with those customers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Van Doren whose telephone number is (571) 272-6737. The examiner can normally be reached on M-F, 8:30-5:00.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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bvd

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